

What is the purpose of the research hypothesis? It is this hypothesis that is directly tested as an important step in the research process. The results of this test are compared with what you expect by chance alone (reflecting the null hypothesis) to see which of the two is the more attractive explanation for any differences between groups you might observe.

Here are the four null hypotheses stated as both directional and nondirectional research hypotheses.

TABLE 6.1 Null Hypothesis and Corresponding Research Hypotheses

<i>Null Hypothesis</i>	<i>Nondirectional Research Hypothesis</i>	<i>Directional Research Hypothesis</i>
There will be no difference in the average score of 9th graders and the average score of 12th graders on the ABC memory test.	Twelfth graders and 9th graders will differ on the ABC memory test.	Twelfth graders will have a higher average score on the ABC memory test than will 9th graders.
There is no difference between the effectiveness of community-based, long-term care for older adults and the effectiveness of in-home, long-term care on the Margolis Scale of Social Activities in older adults.	The effect of community-based, long-term care for older adults is <i>different</i> from the effect of in-home, long-term care on the social activities of older adults when measured using the Margolis Scale of Social Activities.	Older adults exposed to community-based, long-term care score higher on the Margolis Scale of Social Activities than do older adults receiving in-home, long-term care.
There is no relationship between reaction time and problem-solving ability.	There is a relationship between reaction time and problem-solving ability.	There is a positive relationship between reaction time and problem-solving ability.
There is no difference between white and black families in the amount of assistance offered to their children.	The amount of assistance offered by white families to their children is different from the amount of support offered by black families to their children.	The amount of assistance offered by white families to their children is more than the amount of support offered by black families to their children.

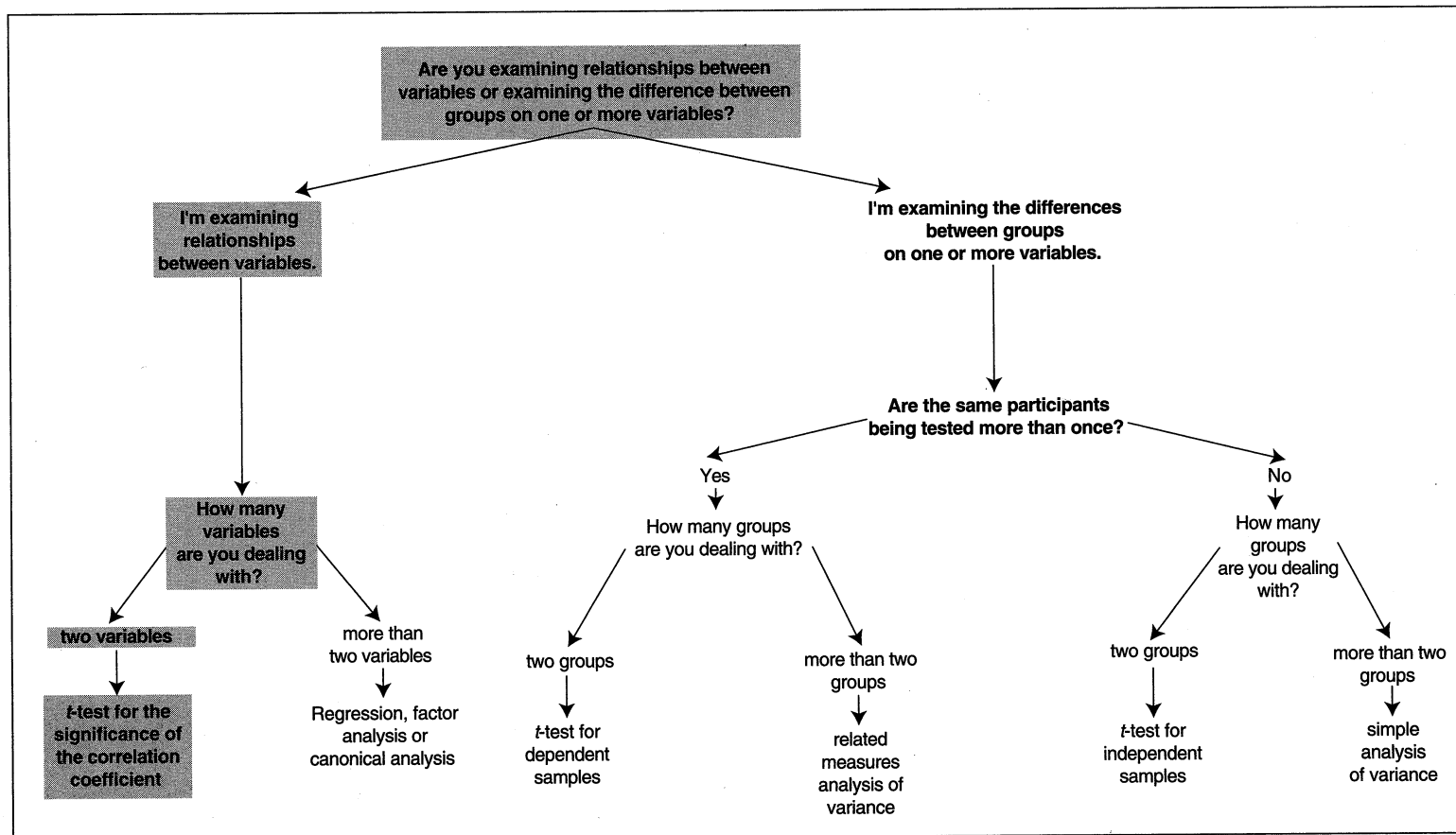


Figure 13.1. Determining That a *t* Test for the Correlation Is the Correct Test Statistic

COMPUTING THE TEST STATISTIC

Here's something you'll probably be pleased to read: The correlation coefficient can act as its own test statistic. This makes things much easier because you don't have to compute any test statistics, and examining the significance is very easy indeed.

Let's use, as an example, the following data that examine the relationship between two variables, the quality of marriage and the quality of parent-child relationships.

Quality of Marriage	Quality of the Parent-Child Relationship
76	43
81	33
78	23
76	34
76	31
78	51
76	56
78	43
98	44
88	45
76	32
66	33
44	28
67	39
65	31
59	38
87	21
77	27
79	43
85	46
68	41
76	41
77	48
98	56
99	55
98	45
87	68
67	54
78	33

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the correlation coefficient.

the correlation coefficient with the critical

greater than the critical or tabled value, the
correlation coefficient is equal to 0) is
explanation for any observed differences.

less than the critical or tabled value, the
attractive explanation for any observed

TABLE B.4 Values of the Correlation Coefficient Needed for Rejection of the Null Hypothesis

One-Tailed Test			Two-Tailed Test		
df	.05	.01	df	.05	.01
1	.9877	.9995	1	.9969	.9999
2	.9000	.9800	2	.9500	.9900
3	.8054	.9343	3	.8783	.9587
4	.7293	.8822	4	.8114	.9172
5	.6694	.832	5	.7545	.8745
6	.6215	.7887	6	.7067	.8343
7	.5822	.7498	7	.6664	.7977
8	.5494	.7155	8	.6319	.7646
9	.5214	.6851	9	.6021	.7348
10	.4973	.6581	10	.5760	.7079
11	.4762	.6339	11	.5529	.6835
12	.4575	.6120	12	.5324	.6614
13	.4409	.5923	13	.5139	.6411
14	.4259	.5742	14	.4973	.6226
15	.412	.5577	15	.4821	.6055
16	.4000	.5425	16	.4683	.5897
17	.3887	.5285	17	.4555	.5751
18	.3783	.5155	18	.4438	.5614
19	.3687	.5034	19	.4329	.5487
20	.3598	.4921	20	.4227	.5368
25	.3233	.4451	25	.3809	.4869
30	.2960	.4093	30	.3494	.4487
35	.2746	.3810	35	.3246	.4182
40	.2573	.3578	40	.3044	.3932
45	.2428	.3384	45	.2875	.3721
50	.2306	.3218	50	.2732	.3541
60	.2108	.2948	60	.2500	.3248
70	.1954	.2737	70	.2319	.3017
80	.1829	.2565	80	.2172	.2830
90	.1726	.2422	90	.2050	.2673
100	.1638	.2301	100	.1946	.2540